What is claimed is:

1. A method for producing a capacitor comprising, as one electrode, an electrical conductor having formed on the surface thereof a dielectric layer and, as the other electrode, a semiconductor layer, the method comprising producing fine electrically defective portions in the dielectric layer so as to make dielectric layer have the LC value of 500 $\mu A/m^2$ or less per surface area of the electrical conductor and forming the semiconductor layer on the dielectric layer by electrification.

2. The method for producing a capacitor as claimed in claim 1, wherein the electrical conductor is at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon.

3. The method for producing a capacitor as claimed in claim 1, wherein the electrical conductor is a laminate with a surface layer being at least one member selected from a metal, an inorganic semiconductor, an organic semiconductor and carbon.

4. The method for producing a capacitor as claimed in claim 1, wherein the semiconductor is at least one semiconductor selected from an organic semiconductor and an inorganic semiconductor.

5. The method for producing a capacitor as claimed in claim 1, wherein the dielectric material is at least one dielectric material selected from a metal oxide and a polymer.

6. The method for producing a capacitor as claimed in claim 5, wherein the metal oxide can be obtained by electrochemical formation of an electrical conductor comprising a metal element.

7. The method for producing a capacitor as claimed in claim 1, wherein the fine electrically defective portions formed in the dielectric layer are produced by bringing the electrical conductor having formed on the surface thereof a dielectric layer into contact with a corrosive gas or liquid capable of corroding the dielectric layer.

8. The method for producing a capacitor as claimed in claim 7, wherein the corrosive gas is a halogen gas, an acid or alkali component-containing water vapor, air, nitrogen or argon gas.

9. The method for producing a capacitor as claimed in claim 7 above, wherein the corrosive liquid is a solution obtained by incorporating a halogen component or

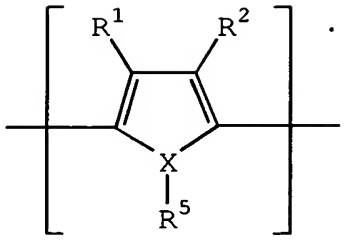
an acid or alkali component into water or an organic solution.

10. The method for producing a capacitor as described in 1 above, wherein the fine electrically defective portions formed in the dielectric layer are produced by attaching fine contacts to the electrical conductor having formed on the surface thereof a dielectric layer.

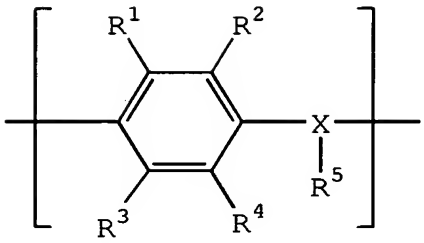
11. The method for producing a capacitor as described in 10 above, wherein the fine contact is at least one member selected from a metal oxide, a salt, a transition element-containing inorganic compound, a transition element-containing organic compound and a polymer compound.

12. The method for producing a solid electrolytic capacitor as claimed in claim 4, wherein the organic semiconductor is at least one selected from an organic semiconductor comprising benzopyrroline tetramer and chloranile, an organic semiconductor mainly comprising tetrathiotetracene, an organic semiconductor mainly comprising tetracyanoquinodimethane, and an organic semiconductor mainly comprising an electrically conducting polymer obtained by doping a dopant to a polymer containing a repeating unit represented by the following formula (1)

or (2):



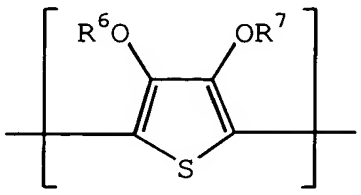
(1)



(2)

wherein R^1 to R^4, which may be the same or different, each independently represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 6 carbon atoms, X represents an oxygen atom, a sulfur atom or a nitrogen atom, R^5 is present only when X is a nitrogen atom and represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and each of the pairs of R^1 and R^2, and R^3 and R^4 may combine with each other to form a ring structure.

13. The method for producing a solid electrolytic capacitor as claimed in claim 12, wherein the polymer containing a repeating unit represented by formula (1) is a polymer containing a structure unit represented by the following formula (3) as a repeating unit:



(3)

wherein R^6 and R^7 each independently represents a hydrogen atom, a linear or branched, saturated or unsaturated alkyl group having from 1 to 6 carbon atoms, or a substituent for forming at least one 5-, 6- or 7-membered saturated hydrocarbon ring structure containing two oxygen atoms when the alkyl groups are combined with each other at an arbitrary position, and the ring structure includes a structure having a vinylene bond which may be substituted, and a phenylene structure which may be substituted.

14. The method for producing a solid electrolytic capacitor as claimed in claim 12, wherein the polymer is selected from polyaniline, polyoxyphenylene, polyphenylene sulfide, polythiophene, polyfuran, polypyrrole, polymethylpyrrole, and substitution derivatives and copolymers thereof.

15. The method for producing a solid electrolytic capacitor as claimed in claim 14, wherein the polymer is poly(3,4-ethylenedioxythiophene).

16. The method for producing a solid electrolytic capacitor as claimed in claim 4, wherein the inorganic semiconductor is at least one compound selected from molybdenum dioxide, tungsten dioxide, lead dioxide and manganese dioxide.

17. The method for producing a solid electrolytic capacitor as claimed in claim 1, wherein the semiconductor has an electrical conductivity of 10^{-2} to 10^{3} S/cm.

18. A capacitor produced by the production method claimed in any one of claims 1 to 17.

19. An electronic circuit using the capacitor claimed in claim 18.

20. An electronic device using the capacitor claimed in claim 18.